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| **Functions** | **The Number System** | **Expressions and Equations** | **Geometry** | **Statistics and Probability** |
| - Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.  - Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.  For example, the function A = s2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1) (2,4) and (3,9), which are not on a straight line  - Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. | - Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational. | - Know and apply the properties of integer exponents to generate equivalent numerical expressions.  - Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.  For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.  - Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.  - Solve linear equations in one variable.  - Analyze and solve pairs of simultaneous linear equations.  a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.  b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. | - Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. | - Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.    - Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. |